

Preparing Trees & Shrubs for a Long Winter's Rest

It's Not Too Late To Bundle Up



By: Gary Johnson

In the upper Midwest, long winters are a way of life for both people and plants. Like the adage “there’s no such thing as a hard winter, it’s really just poor clothing choices,” the same can be said for woody plants if we expect them to survive the four months of slumber. It’s not that winters are that bad, it’s more that plants weren’t properly prepared.

The Four Seasons

As far as woody plants are concerned, there are essentially four seasons to dress for: Autumn (preparing for winter), Winter, Spring (coming out of winter) and the growing season...Summer. Each season presents its unique challenges and influences the ability of a tree or shrub to survive the challenges of winter.

Summer is the beginning of preparation for winter. Like squirrels, trees and shrubs need to stock up on energy reserves to get them through the winter. Plants that photosynthesize normally can do just that and by summer’s end are stockpiling starches and other energized storage materials in roots, buds, twigs and parenchymal rays. Plants that were summer-stressed...well, not so lucky. They may have enough energy to get through a shorter, easier winter and an early, mild spring, but they probably will suffer some dieback, root loss, and cambial death before the next summer.

Minimize summer stresses (mostly water-related stresses) as much as possible to help trees and shrubs make it through winter. Minimize drought stresses, unnecessary wounding and chemical pollution such as deicing salts before they send the plants into winter in a weakened state. If trees and shrubs go through several (3-5) years of defoliation by leaf diseases (e.g. anthracnose) or insect pests (e.g. gypsy moth), they will be more vulnerable to cold temperature damage. In those cases, it’s wise to use some prevention or treatment methods to avoid straining the plants’ systems.

Autumn is the beginning of the season of rest, even though it looks like plants are chugging along. As soon as days become significantly shorter – in mid-August for much of the upper Midwest – perennial plants are beginning the chemical shift to winter, preparing all living cells for the freezing temperatures to come. During this period, it’s critical that trees and shrubs are kept hydrated, their rhizosphere (the soil where the roots are growing) is kept warm and moist, and plant protection systems and chemical protectants are applied, depending on the projected winter problems.

1. If the soil isn't reliably moist from rainfall, irrigate until right before the hose freezes up. Moist soil stays warmer longer and doesn't freeze as deep.

2. Freshen up or add mulch to all new and old plantings. An organic mulch depth of around four inches (not piled against the stems) moderates soil temperatures and moisture content. It's not unusual for moist, mulched soil to remain unfrozen up to Christmas. Roots continue to grow as long as soil temperatures are 40 degrees F or above. For newly planted trees, mulch over the extent of the planting hole. For established trees, a mulched area extending three to five feet away from the trunk or stems is pretty good. Mature prairie trees such as bur oak and honeylocust are less dependent on mulched surfaces than forest trees such as sugar maple and birches. All young trees benefit from mulched root zones.

3. Install all devices or chemicals that prevent animal damage by early to mid-autumn. Rabbits and deer start grazing or rubbing on preferred trees and shrubs (those would be store-bought trees and shrubs) by late September to mid-October. If you think you should install protective devices next weekend, install them today.

By late autumn, install any barriers necessary to prevent deicing salt spray from drifting onto your beloved trees and shrubs. If you use snow fencing, place it approximately 20-25 feet to the windward side of those plants. If you wrap your evergreens, use burlap rather than tarps or plastic (burlap "breathes"). Don't waste your money on anti-transpirant sprays.

4. If your evergreens have a bad habit of opening up like an oyster shell every time it snows or ices up, tie the main stems together with polyethylene chain lock tree tie material, available in garden centers or on-line. An alternative is to use broad, soft rope. This will keep the stems from spreading out and breaking.



Stem protection materials like this rigid plastic mesh tree guard offer excellent protection from rabbit feeding and deer buck rubbing. There's also good evidence that frost cankering of tree trunks are lessened. On top of it all, they don't block sunlight, so the tree trunks can photosynthesize normally.

Other similar materials include chicken wire and hardware cloth.

5. If you used tree water bags to keep newly-planted trees well-hydrated during the growing season, remove them in mid-autumn. Voles and mice favor them for winter homes, chewing holes in the bottoms of the bags for access doors, and feeding off the trunk/stem cambial tissues all winter long.



Tree water bags, aka, “Club Med” for voles in the winter. They chew in access holes through the bag, live there comfortably all winter while they girdle the tree trunk unnoticed. Remove these bags in mid-autumn to avoid this damage.



Winter is for reading, drinking hot cocoa, visiting warm states, cross-country skiing, taking creative classes. There’s not a lot that can be done to help plants other than monitoring and making some slight adjustments.

1. If the snow has accumulated deeper than predicted, you may need to protect branches of maples and fruit-bearing trees higher than originally planned...or shovel some of the snow away from the trees. Rabbits feed 12-18 inches above the level of the snow.

2. If wet snows bend branches, sometimes it can be removed by gently shaking the branches until they straighten up. Do this carefully, though, so you don’t replace one issue (heavy snow) with another (broken branches/stems). In the case of ice bending trees and branches, let the sun work on the ice and don’t try to break the ice off by shaking the tree or shrub. In some cases, you can prop up the heavily ice-laden branches with 2x4 lumber until the sun melts the ice.

Hardware cloth offers excellent protection against deer buck rubbing, rabbit feeding and beaver damage. If voles are problems on your property, they feed below the snow line all winter and only ¼ inch hardware cloth effectively keeps them from damaging tree and shrub stems.

Chicken wire and ½ inch hardware cloth do not exclude voles and mice, nor does paper stem wrapping material.

3. If you are using chemicals that repel animals by odor (e.g. Liquid Fence™ or Plantskydd™) reapply on evergreen foliage or other stems and branches about every 30 days if the temperatures are above freezing. The freezing temperatures have nothing to do with the plant's reception of the materials, more to do with the spray nozzles freezing up. Always stand upwind when applying these nasty-smelling products,

4. If trees are going to frost crack (a physical crack in the tree trunk or large branches that extends from the outer bark and into the wood of the tree), it's going to happen when the temperatures reach their coldest, usually in January and early February. Frost cracks are more common on trees that were water-stressed going into the winter, and almost always start at a previous stem wound (animal damage, lawnmower or string trimmer wound, pruning wounds). There is little evidence (if any) that wrapping stems with paper lessens frost cracking on most plants. Sometimes, it appears that wrapping may help some thin-barked young trees like maples, but the research evidence is conflicting.



Frost cracks are bad. They wound interior wood and decay sets in. Previous winters' frost cracks tend to grow as trees get older. Frost cracks are a function of water stress in the summer and autumn, cold winter temperatures and trunk wounds.

Photo Credit: Michigan State University

Spring is the period when woody plants are yawning and stretching, slowly waking up from their winter's rest. This is when most cold temperature damage takes place, those weeks when daytime temperatures go above 36-38 degrees and then plummet into the 20's, teen's and 10's at night. As woody plants emerge from that winter's rest, those chemical changes that prepared them for winter (acclimation) and below zero temperatures (cold hardiness) are reversed (deacclimation). Plants that were hardy to -30 in January can be damaged or killed if temperatures in March or early April suddenly drop to 20-25 degrees F *above* zero.

There's nothing to be done about weather but anticipate some branch die back, some lost flower buds, some frost cankering (areas of diffused/irregular tissue death) in the cambium/bark of younger/thinner barked tree and shrub stems. Vegetative (leaf) buds are the most cold-hardy

parts of the trees or shrubs, so these are rarely damaged. The least cold hardy plant parts are safely below the ground and mulch layer – the roots.

1. By late spring, stem protection or exclusionary fencing can be removed. Be conservative. Even though the lawn is full of clover, rabbits still love the taste of store-bought tree and shrub bark. At the same time, if the stem protection excludes sunlight, the normal photosynthesis and growth that should be going on in bark and tree trunks is being stopped. Not good.

2. By late spring to early summer, plant tissue death from the winter will be obvious and some can be repaired. Prune out dead branches or tips of branches. With evergreens, don't remove those brown-needled branches if the buds are still alive. Sample a few buds by rolling them between your fingers. If they feel supple, they're alive. If they feel dry, like you're rolling your own cigarette, they're dead.

3. Tree trunks that were partially girdled by animal feeding will usually recover, lay new sapwood (eventually) over the girdled area/s. If the trunks have been completely girdled for several inches up the trunk, there's a good chance they will eventually die within a year or two. For shrubs, new shoots will replace severely girdled stems.

Back to summer. You have a few weeks to go from pasty-white to less pasty-white and to begin preparing those trees and shrubs for winter. The laws of nature in the upper Midwest dictate that every winter is unique. There are no "normal" winters. Some are cold and snowy, cold and snow-less, mild and wet, mild and dry...all followed by unpredictable spring weather.



Plastic stem protection devices actually do a pretty good job of minimizing animal feeding damage or deer buck rubbing damage to tree trunks...unless the snow gets deeper than predicted. On this apple tree, the lower 18 inches of the tree trunk were untouched by rabbits. However, there was 18 inches of snow for the rabbits to stand on and feed above the stem protection. Rats!

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